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BOEING CO WICHITA KS AIRPLANE DIV

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COANDA/REFRACTION TEST CELL SYSTEM ASSEMBLY AND INSTALLATION IN--ETC(U)

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INTRODUCTION

The coanda/refraction test cell system is a new concept for noise abatement. This concept requires a somewhat different approach to the arrangement of structural components than ordinarily encountered in structural steel work. This document has been prepared to assist in the erection of this test cell system. The information is presented in a logical order of erection and provides some additional suggestions and requirements to insure a properly installed system.

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2.0 COANDA/REFRACTION TEST CELL ASSEMBLY AND ERECTION

2.1 Site Preparation (Drawing 35-33326)

The site preparation drawing locates and calls for the attachments, anchors, etc., directly or by references, required for securing the coanda/refraction test cell system to the foundation and floor provided at the site location. The following paragraphs define the detail procedure to erect the test cell on the prepared site.

2.2 Installation of Ejector Supports

Locate ejector support assemblies 35-33336-3 and -4 as shown on 35-33336-1 installation. There are leveling screws in each base plate for the purpose of leveling the top face of the ejector supports with respect to the engine centerline reference flag Note 1 on 35-33336. With the supports properly located install BAC A25A12C anchors per BAC A25A. Preload fasteners to 125 Inches-Lbs. prior to applying Eabco Type 636 grout or equivalent per IPS 12H41-01.

2.3 Assembly and Installation of Coanda and Coanda Support

2.3.1 Coanda Support Assembly and Installation

Assemble 35-33314-2, -3, -4, -5 and -6 sub-assemblies on the site floor with the lugs for the forward strut up and with the base trunnions located per the site preparation drawing 35-33326. It will be necessary to make sure the pins attaching the 35-33314-5 and -6 base trunnions are on a common centerline and parallel with those on the base trunnions of the forward legs.

Install the anchors in the floor per instructions on drawing 35-33320. Place shims per flag Note 2, drawing 35-33320 under base trunnions and install bolts finger tight.

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Assemble 35-33314-25 struts with the 35-33318-6 pins to the 35-33314-2 and -3 bipod struts. Install 35-33314-5 base trunnion on the anchors for the front struts using shims per flag Note 2, drawing 35-33320. Tighten nuts only finger tight.

Lift the assembled struts to an upright position, swing the forward struts into place on the base trunnions and install 35-33318-5 pins.

Shim as required under base trunnions to meet the location requirements for 35-33318-3 pin per flag Note 2 of drawing 35-33320. Preload fasteners to 125 inches-lbs. and grout per flag Note 3 of 35-33320.

2.3.2 Coanda Assembly and Installation

Place 35-33321-34 needle bearings (16 each side) and 35-33321-35 bearing retainer (1 each side) on the rear extension of the ejector support.

Remove the 35-33321-30 retainer assembly from each side of the coanda inlet assembly drawing 35-33321.

Place the coanda inlet assembly in between the struts of the coanda rear support with the dolly assemblies (35-33321-2) in place on the needle bearings located on the ejector support extensions and rear end resting on the floor.

Install the coanda middle section assembly (35-33324-1) using the bolts called for on drawing 35-33320. Hoist these assemblies into place and install 35-33318-3 pin through the rear support and into the coanda trunnion fitting. Reinstall the 35-33321-30 retainer assembly on the 35-33321-2 dolly assembly.

Install the coanda upper section assembly (35-33325-1) as shown on drawing 35-33320.

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2.4 Installation of Ejectors

Place the aft ejector in place using a fork lift, or slings may be used through the scallops in the frame, as required. Bolt the forward frame to ejector supports as shown on drawing 35-33320 coanda assembly and install the clamps on the aft frame per same drawing. Install the center and forward ejectors in the same manner.

2.5 Assembly of Rear Acoustic Panel and Assembly and Erection of the Stack Support

Assemble the rear acoustic panels 35-33285-15 and -16, move them in and lean them on the back of the coanda. There are holes in the top center web for threading a choker for lifting.

Assemble and erect the stack support per 35-33283-2 (Sht.4) and 35-33307.

2.6 Erection of the Outer Walls

The outer walls can be erected in either of two ways: 1) assemble the walls laying down with the top edge aligned, then lifted and set into place with shims and grout as required under the bottom; or 2) the individual panels can be set up with the tops aligned, the bottoms shimmed and grouted, and then bolted. The walls will need to be braced with temporary shoring until the air inlet beams, lower stack and roof side supports can be installed.

The installation of the outer wall is shown on 35-33283 (Sht. 3). Boeing BMS 5-44, Class II-2 or equivalent adhesive seal should be applied as required to seal air-tight, the joints between each wall panel faying surface on this and subsequent installations as noted.

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2.7 Installation of the Air Inlet Beams

The air inlet beams are installed on the top of the outer side walls as shown on 35-33283-3 (Sht. 5). Lifting lugs are provided on the top side for connecting a sling.

2.8 Installation of the Lower Stack

Provisions have been made in the top of the lower stack panels for a choker to be used in lifting them into place. Install the lower stack per 35-33283-4 (Sht. 6).

2.9 Installation of Air Inlet Closure and Roof Side Support

Install the air inlet closure per 35-33283-6 (Sht. 7) and the roof side support per 35-33283-5 (Sht. 7).

2.10 Installation of Rear Air Inlet Panels

Assemble and install the rear air inlet panels per 35-33283-8, (Sht. 10).

2.11 Installation of Inner Wall

Install the inner wall per 35-33283-9 (Sht. 11).

A lifting lug has been provided on the inner face of each wall panel for hoisting.

A generous amount of BMS 5-44, Class 11-2 sealer should be used on all faying surfaces to insure the absence of air gaps between the inner and outer wall. This is particularly important in blind locations such as along the top of the wall.

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It is also important that the surface on which the inner wall rests be properly located with respect to the outer wall to insure alignment of the bolts holding the inner and outer wall together.

2.12 Installation of Rear Acoustic Panel

Hoist the rear acoustic panel into place and install as shown on 35-33283-13 (Sht. 4).

2.13 Installation of Roof and Ceiling

Install the roof and ceiling per 35-33283-7 and -10 (Sht. 8).

It is recommended that a scaffold be erected over the ejectors and forward portion of the coanda to lay the ceiling panels on prior to installing the roof. Allow room for jacks to lift ceiling. Hoist the ceiling panels on to the scaffold. Hoist the roof panels into place and install as shown on 35-33283-7. Lift the ceiling panels into place with jacks. Use generous amounts of sealer on faying surfaces to preclude air gaps.

2.14 Installation of Air Inlet Acoustic Panels

Install the air inlet acoustic panels per 35-33283-11 (Sht. 12). It is suggested that the inner panels be installed first, followed by the outer panels and the center panels in that order.

Provisions have been made in the top of the panels for accepting a lifting eyebolt having a 1/2-13UNC thd shank located about 1/3 of the distance in from each end of the panels.

2.15 Installation of Air Inlet Roof

Install the air inlet roof panels per 35-33283-12 (Sht. 13). Install air inlet roof panels with the perforated side down. Hoisting lugs are provided for handling these roof panels.

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2.16 Installation of Coanda Extension

Install the coanda extension per 35-33283-15 (Sht. 14).

Install with the perforated sheet on the aft side (perforated sheet facing away from the inlet). Provisions have been made for the installation of the rake.

2.17 Installation of the Upper Stack

Install the upper stack per 35-33283-14 (Sht. 15).

Lifting lugs have been provided on these stack panels.

2.18 Installation of Iris and Iris Actuators

Install iris per 35-33306 and the iris actuators per 35-33283-17 (Sht. 9).

2.19 Installation of Personnel Doors

Install personnel doors per 35-33283-16 (Sht. 16).
Make sure doors are adjusted to eliminate air gaps at seals.

Install door stops on the floor per 35-33309.

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